

### REMARKS

Claims 19-20 and 23-33, as amended, are currently pending in the above-captioned application for the Examiner's review and consideration. Claims 19 and 26 were amended to recite that: 1) the lower value of the sodium oxide content range in the claimed glass compositions should be 4.5%, which is supported by, *inter alia*, page 4, line 17 of the certified translation of French Patent Application No. 97/05,364, filed April 30, 1997, to which the above-captioned application claims priority (the certified translation was filed with the U.S. Patent & Trademark Office on June 15, 2001); 2) the lower value of the calcium oxide content range in the claimed glass compositions should be 7%, which is also supported by, *inter alia*, page 4, line 19 of the certified translation of French Patent Application No. 97/05,364; and 3) the upper value of the magnesium oxide content range in the claimed glass composition should be 5%, which is supported by, *inter alia*, page 7, lines 23-27 of the certified translation of French Patent Application No. 97/05,364. As no new matter has been added by these claim amendments, Applicants respectfully request their entry into the record of the above-captioned application at this time.

Claims 19-20 and 23-32 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,990,023 to Siedel *et al.* ("Seidel"), on pages 2-5 of the Office Action. Applicants respectfully traverse the rejection.

Applicants respectfully submit that Siedel does not constitute prior art under 35 U.S.C. § 102(e). Siedel has a filing date of March 11, 1998. In contrast, the present application claims priority under 35 U.S.C. § 119 to: German Application No. 197 10 289.1, filed March 13, 1997; French Application No. 97/05364, filed April 30, 1997; and French Application No. 97/07521, filed June 17, 1997, all of which have priority dates preceding the U.S. filing dates of Seidel.

In the Response to Arguments section of the Office Action, at pages 9-10, the Examiner notes that at least the lower limit of 2 wt% sodium is not supported by the aforementioned foreign priority documents. Accordingly, the Examiner alleges that the effective priority date for this feature is March 12, 1998, *i.e.*, the filing date of the corresponding PCT application. Applicants have amended the claims so that the lower bounds of the sodium oxide and calcium oxide content ranges, as well as the upper bound of the magnesium oxide content range, are in accordance with the disclosure of the foreign

priority documents. Applicants, therefore, respectfully submit that the claims, as amended, are fully supported by the foreign priority documents and that the priority date for the claims in the present application predates the U.S. filing date of Seidel, *i.e.*, March 11, 1998. Since the U.S. filing date of Seidel is not earlier than the effective filing date of the present application, the Seidel reference cannot constitute prior art under 35 U.S.C. § 102(e). For the foregoing reasons, Applicants respectfully submit that Seidel does not constitute prior art under 35 U.S.C. § 102(e) and respectfully request that the rejection be reconsidered and withdrawn.

Claims 19-20 and 23-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 96/11887 to Koch *et al.* ("Koch"). The Office Action indicated that Koch discloses a glass that has overlapping ranges of components with the instantly claimed glass composition, which thus establish *prima facie* obviousness. Applicants respectfully traverse this rejection.

In the Response to Arguments section of the Office Action, at pages 10-11, the Examiner notes that data establishing the difference between Example 9 of the Koch reference and the instantly claimed invention must be submitted in the form of an affidavit or declaration to be sufficient to overcome the rejection. Thus, Applicants have enclosed herewith the Declaration of Dr. Patrick Garnier, which is submitted in accordance with 37 C.F.R. § 1.132, to offer comparative data and analysis regarding Example 9 of the Koch reference and its comparison to the instantly claimed invention. Applicants thus reiterate the remarks below, which were originally offered in a Second Amendment filed with the U.S. Patent & Trademark Office on June 15, 2001, and which are supported in substance by the enclosed Declaration of Dr. Patrick Garnier.

Koch discloses a heat resistant glass (*See, e.g.*, Koch, column 1, lines 5-7). The glass composition comprises SiO<sub>2</sub> (45-68%), Al<sub>2</sub>O<sub>3</sub> (0-20%), ZrO<sub>2</sub> (0-20%), B<sub>2</sub>O<sub>3</sub>, (0-10%), Na<sub>2</sub>O (2-12%), K<sub>2</sub>O (3.5-9%), CaO (1-13%) and MgO (0-8%) (*See, e.g.*, Koch, column 1, line 65 to column 2, line 10). Koch, however does not disclose the glass composition or the parameters recited in independent claim 19, as amended. *See* Declaration of Dr. Patrick Garnier at ¶¶ 5-8 ("claim 1" in the attached Declaration was meant to refer to the first numbered claim of the above-captioned application currently pending, which is independent claim 19).

For example, Koch does not disclose or suggest a glass composition having between 55 and 75% SiO<sub>2</sub> and a strain point temperature of greater than 570°C, as recited in independent claim 19. *See* Declaration at ¶ 8. Koch merely discloses that his glass composition can have a strain point of equal to or greater than approximately 530°C (*See, e.g.,* Koch, column 2, lines 20-21). There is, however, no disclosure of a strain point of greater than 570°C and a SiO<sub>2</sub> content of greater than 55%. In the examples disclosed in Koch it is clear that his compositions only have a strain energy greater than 570°C when the amount of SiO<sub>2</sub> is less than 55% (*See, e.g.,* Koch, column 7, Tables 1 and 2).

Applicants note that when the amount of SiO<sub>2</sub> is below 55% the resulting glass is insufficiently stable (*See, e.g.,* Specification, page 11, page 18-20). Applicants, however, have unexpectedly discovered that a glass composition having greater than 55% SiO<sub>2</sub> can also have a strain point of greater than 570°C. Koch is completely silent as to a glass composition having more than 55% SiO<sub>2</sub> and a strain point of greater than 570°C, as presently claimed. *See* Declaration at ¶ 8. Indeed, his examples actually teach away from such a composition and clearly provide no reasonable expectation that such a composition could be successfully manufactured.

Furthermore, Applicants note that examples 3-4 of Koch have values for B<sub>2</sub>O<sub>3</sub> that are outside of the range recited in independent claim 19, as amended. Similarly, Examples 5-8 of Koch all have values for Al<sub>2</sub>O<sub>3</sub> outside of the range recited in independent claim 19, as amended; Examples 9-11 have values for ZrO<sub>2</sub> outside of the range recited in independent claim 19, as amended; and Examples 11 and 12 have a value for  $\alpha$  outside of the range recited in independent claim 19. Thus, each of the compositions disclosed in the examples in Koch have a different composition or different properties than the claimed composition.

The Examiner previously alleged that Example 9 of Koch is close to that of the instant claims and teaches a glass composition having 54.6% silicon oxide (which he rounded up to 55%), 3.5% calcium oxide (which he rounded up to 4%), 4.2% magnesium oxide (which he rounded down to 4%), and a strain point of 606°C. Applicants respectfully point out to the Examiner, however, that Example 9 of Koch also teaches incorporating 10 wt% zirconium oxide into its glass composition, which is at least 20% higher than the upper

end of the range recited in the instant claims (*i.e.*, 0 to 8 weight percent zirconium oxide). *See* Declaration at ¶ 8.

In addition, Koch does not disclose or even remotely suggest any ranges for the specific thermal stress coefficient,  $\varphi$ , with respect to its glass compositions. Indeed, there is not even a teaching or suggestion in the disclosure of Koch of the importance of maintaining the  $\varphi$  coefficient between certain parameters, or any parameters for that matter, whereas the instant claims recite a specific range of values for the  $\varphi$  coefficient of between 0.5 and 0.85 N/(mm<sup>2</sup>•°C). Silica-soda-lime glasses with  $\varphi$  coefficients in these ranges are particularly advantageous for improved toughness applications and improved resistance to thermal stresses due to temperature differences. *See* the instant specification at page 4, lines 13-33 and at page 8, lines 1-39; *see also* Declaration at ¶¶ 6-7.

The Office Action, on page 5, acknowledges the failure of the Koch reference to disclose or suggest any aspect of the  $\varphi$  coefficient but improperly characterizes the  $\varphi$  coefficient as a material property that is set, based solely on the concentrations of each of the components of a given composition. The Examiner, however, alleged that, despite Koch's lack of teaching or suggestion, similar composition ranges would necessarily encompass similar values of the  $\varphi$  coefficient. First, Applicants note that, for the reasons discussed above, the compositions disclosed in Koch, including Example 9, are not similar to the claimed glass composition. *See* Declaration at ¶ 6. Furthermore, Koch is completely silent as to the  $\varphi$  coefficient and provides no suggestion or teaching that a silica-soda-lime glass, as currently claimed, could be manufactured to have the claimed  $\varphi$  coefficient. The particular values of the  $\varphi$  coefficient, in combination with the other features of the instant claims, are not taught or suggested by Koch. As such, one of ordinary skill in the art would not have had a reasonable expectation of success in achieving the instantly claimed invention. *See* Declaration at ¶ 7.

Applicants respectfully submit, contrary to the suggestion in the Office Action and especially in view of the distinct differences detailed above between the instantly claimed component ranges and those in all the examples from the Koch disclosure, that the Koch disclosure does not inherently teach the claimed ranges for the  $\varphi$  coefficient merely by its disclosure of large ranges of component contents for its glass compositions. *See* Declaration at ¶¶ 6-7. There is absolutely no disclosure or suggestion in Koch of a glass composition

having more than 55% SiO<sub>2</sub>, a strain point greater than 570°C, and a  $\phi$  coefficient of between 0.5 and 0.85 N/(mm<sup>2</sup>•°C). *Id.* Indeed, Applicants have reproduced the glass according to Example 9 of Koch, *i.e.*, the glass the Examiner alleges is most similar to the glass of the invention, in order to determine the value of its  $\phi$  coefficient. *See* Declaration at ¶¶ 5-6. Importantly, the  $\phi$  value of the glass according to Example 9 of Koch is outside the claimed range of 0.5 and 0.85 N/(mm<sup>2</sup>•°C). As recited in the instant application, the  $\phi$  coefficient is defined by the following relationship:  $\phi = \alpha \cdot E / (1 - \mu)$ . For the glass according to Example 9 of Koch, it was determined that  $\alpha = 84 \cdot 10^{-7} \text{ }^{\circ}\text{C}^{-1}$ ;  $E = 80.9 \cdot 10^3 \text{ N/mm}^2$ ; and  $\mu = 0.76$ . Thus, the  $\phi$  coefficient for the glass according to Example 9 of Koch was calculated to be 0.89 N/(mm<sup>2</sup>•°C). This value of the  $\phi$  coefficient lies *outside* the instantly claimed range of between 0.5 and 0.85 N/(mm<sup>2</sup>•°C). *See* Declaration at ¶¶ 6-7. Applicants respectfully submit, therefore, that the disclosure of Koch cannot render obvious the instant claims.

Further, Koch teaches compositions in which the sum of the silica, alumina, and zirconia contents is less than or equal to 70% by weight (*See, e.g.*, Koch at column 2, lines 11-12). On the contrary, claim 33 recites compositions wherein the sum of the silica, alumina, and zirconia contents is between 71.5% and 75% by weight. *See* Declaration at ¶ 8. Thus, Koch *teaches away* from the glass composition recited in claim 33 by requiring the sum of these components to be below the range recited in new claim 33. As a result, the disclosure of Koch cannot render obvious the subject matter of instant claim 33.

For any of the foregoing reasons, Applicants respectfully submit that Koch does not disclose or suggest the glass composition of the invention or the properties of the glass composition recited in the instant claims, as amended. Thus, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claims 19-20 and 23-32 were rejected under the judicially created doctrine of obviousness-type double patenting over U.S. Patent Nos. 6,063,718 to El Khiati *et al.* (“El Khiati”), on page of the Office Action. The Office Action indicated that this patent would also form the basis for an obviousness rejection under 35 U.S.C. § 103(a), if the inventions were not commonly owned at the time of the instant invention. Applicants respectfully traverse.

Initially, Applicants note that El Khiati was filed in the United States on January 16, 1998, which is after the priority date of the instant application. As the instantly

claimed invention and the subject matter claimed in El Khiati were commonly owned, as attested to in a Terminal Disclaimer enclosed herewith, it is unclear to the Applicants how this patent could be the basis for a rejection under 35 U.S.C. § 103(a), when 35 U.S.C. § 103(c) specifically provides that § 102(e), § 102(f), or § 102(g) prior art "shall not preclude patentability" under 35 U.S.C. § 103. *See* 35 U.S.C. § 103(c).

The enclosed Terminal Disclaimer is submitted herewith by Applicants to disclaim the portion of the term of any patent granted on the above-identified matter that extends beyond the patent term originally granted to El Khiati. As a result, Applicants respectfully submit that the obviousness-type double patenting rejection has been overcome. Thus, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Applicants respectfully submit that all claims are in condition for allowance, early notice of which would be greatly appreciated. Should the Examiner disagree, Applicants respectfully request that the Examiner call the undersigned attorney for Applicants to arrange for a telephonic or personal interview to discuss any remaining issues and expedite the allowance of this application.

No fees are believed due for this submission. Should any fees be required, however, please charge the required fees to Pennie & Edmonds LLP Deposit Account No. 16-1150.

Respectfully submitted,

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Enclosures

## Appendix A

### AMENDMENTS TO THE CLAIMS

The rewritten claims were revised as follows:

19. (Twice amended) A silica-soda-lime glass composition comprising the following components:

SiO <sub>2</sub>	55-75%
Na <sub>2</sub> O	[2] <u>4.5</u> -10%
CaO	[4] <u>7</u> -12%
Al <sub>2</sub> O <sub>3</sub>	0-7%
ZrO <sub>2</sub>	0-8%
K <sub>2</sub> O	0-8%
MgO	0-[4] <u>5</u> %
B <sub>2</sub> O <sub>3</sub>	0-3%

wherein the glass composition has a  $\phi$  coefficient of between 0.5 and 0.85 N/(mm<sup>2</sup>•°C), a working point of less than 1200°C, a thermal expansion coefficient  $\alpha_{20-300}$  of between 60 and  $88 \times 10^{-7} \text{°C}^{-1}$ , and a strain point of greater than 570°C.

26. (Amended) The composition of claim 19 comprising the following components:

SiO <sub>2</sub>	55-75%
Na <sub>2</sub> O	[2] <u>4.5</u> -8%
K <sub>2</sub> O	2-8%
CaO	[4] <u>7</u> -11%
Al <sub>2</sub> O <sub>3</sub>	0-7%
ZrO <sub>2</sub>	0-8%
MgO	0-[4] <u>5</u> %